

# SILC Evaluation

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## December Academy

December 2010  
Issue 4

### Learning Objectives

#### The learner will:

1. Explain why the heliocentric revolution is better understood when viewed from a social studies perspective.
2. Describe how a rigorous science lecture can also contain historical and geographic information.
3. Discuss how writing (both prose and poetry) can be used to implement science content.
4. Show examples of how current events can be understood with the inclusion of a scientific perspective.
5. Locate web site, "American Indian Star Lore" at the Western Washington University Planetarium.
6. Describe the Hopi use of the position of the sun for ceremony and planting.
7. Identify three cultures (tribes) that used the sun in ceremony.
8. Describe at least three types of sacrifice performed during the sun dance.
9. Learners will understand criteria for selecting classroom assessments (formative or summative) that provide rich information about student understanding of a concept or skill.
10. Learners will understand several strategies for identifying patterns in students' understanding of the target science concept or skill.
11. Learners will understand how to "close the loop" by using findings on student understanding to modify instruction.

### Academy Information

**Dates:** December 2<sup>nd</sup> and 9<sup>th</sup> in Bozeman and Helena

**Instructors:** Shannon Willoughby (Physics face-to-face), Walter Fleming (IEFA), and Mary Larsen, Jeniffer Stadum and Elisabeth Swanson (Pedagogy).

#### Topics:

Physics: Heliocentric model  
IEFA: The Sun in Native American cultures  
Pedagogy: Formative assessment

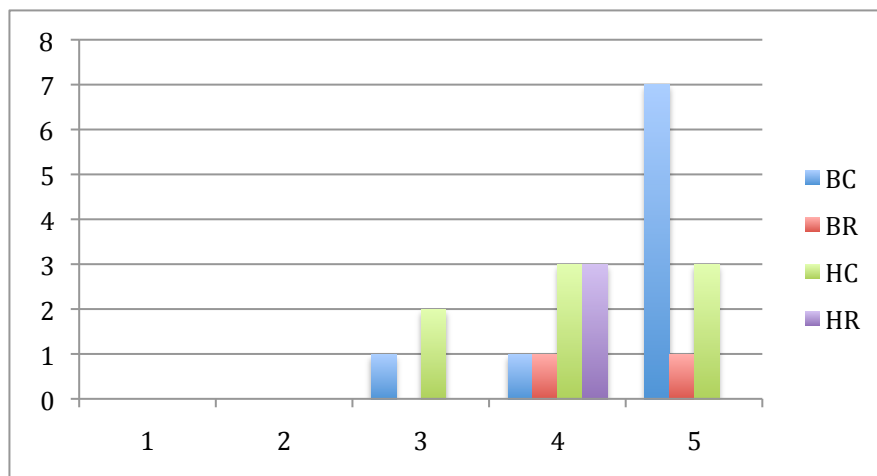
**Teachers' Attendance:** 23/25 total

12/14 teachers in Bozeman (absentees justified)  
11/11 teachers in Helena

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## Academy Delivery



Site (N)	Academy Delivery Average
BC (10)*	4.20
BR (2)	4.50
HC (8)	4.12
HR (3)	4.00
<b>Overall</b>	<b>4.20</b>

BC: Bozeman City, BR: Bozeman Rural, HC: Helena City, HR; Helena Rural

\* Not all teachers completed all sections of the survey

### Delivery quality: most recurrent teachers' comments

#### Physics/Astronomy

Helena: Fun, interesting, and well presented activity. Like integration to other topics.

Bozeman: Enjoyable and easy to follow. Teachers appreciate the cross-curricular connection.

#### Pedagogy

Helena: Interesting and very informative.

Bozeman: Teachers found the presentation informative, timely, and interesting.

#### Indian Education For All

Helena: This presentation was informative and interesting; although a little rushed. Enjoyed learning about colors but hard to see the connection with science

Bozeman: Good, interesting, and informative presentation. Great visuals.

*"I will definitely use the Native American stories sites. My students are fascinated by the stories"*

## Classroom transferability: most recurrent teachers' comments

### Physics/Astronomy

Helena: Somehow transferable in low grades. The timeline activity can be used in the classroom.

Bozeman: Teachers see the timeline and the different writing genre as transferable. The presented activities are not so much transferable in lower grades.

### Pedagogy

Helena: Very transferable; the template can be used to organize and evaluate students' work.

Bozeman: The presented topic and template will help evaluate students' work.

### Indian Education For All

Helena: The websites and making a medicine wheel can be used in the classroom. Other teachers indicated that with more time for understanding this topic could be used in the classroom.

Bozeman: The websites are a great resource to use in the classroom; medicine wheels and some pictures can be used in the classroom. For some teachers the presented topic is somewhat transferable. Other teacher sees it as personal learning.

*"It is interesting to think that cultures from around the world all used sun-centered belief systems."*

## Teachers' achievement of learning objectives: most recurrent comments

### Physics/Astronomy

Helena: High achievement of this section's objectives on how to integrate science to other teaching areas.

Bozeman: Teachers are achieving this section's LO and increasing their understanding.

### Pedagogy

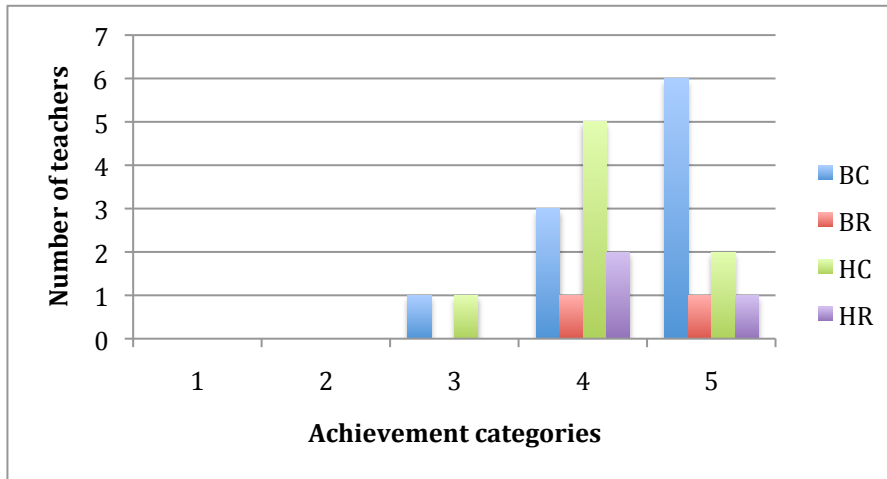
Helena: High achievement of this section's objectives to evaluate students' work and to talk to other teachers.

Bozeman: This section's objectives were achieved regarding students' assessment and the January miniscope.

### Indian Education For All

Helena: High achievement of this section's objectives. Teachers want to learn more and become aware about other cultures' beliefs. Some teachers need more time to process the provided information.

Bozeman: This section's objectives were achieved. Some teachers feel they learned a lot and the topic fit their curriculum



Site (N)	Degree of Achievement Average
BC (7)*	4.71
BR (2)	4.50
HC (8)	4.12
HR (3)	4.33
<b>Overall</b>	<b>4.42</b>

HR; Helena Rural, HC: Helena City, BR: Bozeman Rural, BC: Bozeman City  
 \* Not all teachers completed all sections

## Trends of the effects of SILC online component

Helena: the online component had a positive effect on at least 60% of the respondents (11) on: science content understanding, science factual knowledge, knowledge about nature of science, and curiosity about science. It had a neutral impact on 55% or less of the respondents on: the ability to think critically, access to online resources, science teaching, and knowledge about science learning. It had a negative impact on the ability of think critically of 27% of the respondents.

Bozeman: the online component had a positive effect on at least 66% of the respondents (9) on: science content understanding, science factual knowledge, knowledge about nature of science, curiosity about science, access to online resources, and science teaching; and positively impacted the knowledge about science learning of 100% of the respondents. It had a neutral impact on the ability to think critically of 44% of the respondents.

## Average time of classroom science teaching in minutes

### Helena teachers

Grades (N)	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday
6-8 (4)	84	60	74	74	76	74
3-5 (4)*	39	9	50	24	21	25
K-2 (4)	32	44	0	16	0	15

## Average time of classroom science teaching in minutes

### Bozeman teachers

Grades (N)	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday
6-8 (0)	0	0	0	0	0	0
3-5 (4)	26	26	31	26	26	26
K-2 (6)*	38	20	46	35	23	27

\*. Indicates cases in which a teacher teaches multiple grades.

These average science teaching times correspond to the last week before winter break, some Helena teachers indicated that during this week they change their normal schedule so the reported time is not representative of their schedule.

One teacher from Bozeman teaches about three science units a year, each consisting of 12-14 lessons each; she indicated a week of a science unit period time. Other Bozeman teacher teaches science in a block; currently she is in "social studies" block, but she reported a normal schedule during a science block.